SOURCE DATA ENTRY TERMINAL

This is a continuation of application Ser. No. 833,898, filed on June 13, 1969, and now abandoned.

BACKGROUND

The continued and active development of ever-improved computer hardware and associated peripheral devices which has taken place in the present era has continuously improved the efficiency of data processing per se; however, the aspect of effective and efficient data capture and input to the computer itself has always been a problem of significance, and this problem has become greatly enlarged by the ever-increasing improvement and sophistication of computers themselves.

In previous times, the key punch was almost the exclusive instrument of source data preparation and computer input of the same, with upwards of a half-million such devices operating daily in the field. That the key punch, as well as the punched card produced thereby, has limitations and disadvantages, even as a form of data handling, is scarcely debatable at the present time. Many efforts have been made to provide different types of devices which would accomplish source data capture and input in different ways, and which would hopefully be more advantageous and more effective than punched cards.

One development in the way of an input device has been the on-line video terminal, in which a remote location communicates with a computer at a central location through a telephone or telegraph link. In such a system, data is entered from the remote location by an operator there who uses a keyboard on the terminal device, with the data which is transmitted being visually displayed on a cathode ray tube to the operator as she types on the keyboard. Such terminals are basically quite effective devices, but they are relatively inefficient with respect to on-line computer time, as well as communication link usage time. More recent development has produced the concept of an off-line data entry terminal in which data from a source document or the like is entered by an operator through the use of a keyboard and captured by being recorded on tape. Such a device is extremely effective, since the operator may take whatever time is necessary to capture the data on tape, whereas access time to a central processing unit is drastically diminished, since it is only necessary to replay the tape over the communications link. Furthermore, relatively low-cost storage per record is provided, and the terminals are very quiet compared to normal key punch clatter.

THE PRESENT INVENTION

The present invention provides a keyboard-to-tape data terminal based on a new design concept, by which significant advantages are made obtainable. Firstly, it is an objective of the invention to provide a keyboard-to-tape source data entry terminal with video display, in which the data is uniquely captured on magnetic tape cassettes of the general type presently finding extensive and widespread usage in audio entertainment equipment but never heretofore used in data-handling apparatus, for the off-line capture and preparation of data for purposes of computer input and also for easy and inexpensive storage of any desired duration.

Further, it is a major objective of the invention to provide a self-contained, stand-alone, programmed

video terminal which incorporates a microprocessor for program-controlled data entry and preparation and for the possibility of having at least limited computer capabilities, including arithmetic routines and the like, at the data source. Involved in this major objective is the provision of a microprocessor in such a data entry terminal which incorporates a central logic unit which incorporates all (or substantially all) control logic for the various input/output elements of the terminal, i.e., keyboard, video display, tape recorder, and the like, as well as a wired read-only memory containing a hardwired program designed for a particular functional application and dedicating the terminal to that application, wherein the enter purpose and operation of the machine can be completely revised merely by substitution of a different read-only memory configuration, containing a different hardwired program dedicating the terminal to a different function, without the necessity of redesigning or modifying the operational and control logic.

Thus, the hardwired read-only memory and the centralized logic unit of the present design form a small but nonetheless powerful microprocessor providing an extremely flexible and wide-scale scope of operation for a data entry terminal having all of the needed operational functions ancillary to source data preparation, including either programmed or free-form data entry, verification, correction, recording, search, edit, and display. Pooling and selective data transfer is made possible by the provision of a second cassette recorder which, when not in active use, may be used for resident storage of data entry format programs.

Briefly stated, the data entry terminal of the invention therefore comprises a programmed microprocessor incorporating a wired read-only memory and central logic unit, a keyboard having alpha, numeric, punctuation, and special symbol keys for providing a bit-coded input to the microprocessor, a buffer or intermediate memory for temporary storage of both programs and data which has been entered from the keyboard, a CRT display for visually reading out data or program information from the buffer memory and, in a preferred embodiment, at least one magnetic tape cassette recorder, on which data from the buffer memory may be recorded. A number of peripheral devices may be interfaced to this basic terminal configuration where desired, including for example a printer, a communications link coupled to other like entry terminals or to a shared central processor unit, a converter for conversion of the data recorded on the cassettes to computer-compatible tapes, and the like. Generally, the provision of the magnetic tape cassette recorder will be desired; it is to be noted, however, that in certain functional operational configurations, this is not a strict necessity and the required data storage may be adequately furnished by the buffer memory, in an interconnected system of independent but mutually cooperative data entry sources.

IN THE DRAWINGS

FIG. 1 is a frontal perspective view showing the overall outward appearance of the preferred data entry terminal;

FIG. 2 is a simplified schematic diagram in block form, showing the basic organization of the device;